

# Service Manual

**MODEL TD 855D**  
**FULLY AUTOMATIC DIRECT**  
**DRIVE TURNTABLE**



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# 1. SPECIFICATIONS

General	NOMINAL	LIMIT
Type .....	2-Speed fully automatic direct drive system	
Platter .....	Aluminum alloy die-cast 308mm outer diameter, weight 1.4kg.	
Motor .....	Brushless DC servo direct drive motor	
Speed .....	33-1/3 rpm and 45 rpm	
Pitch control range .....	±4%	
Speed change system .....	Electronic change-over system	
S/N .....	53dB	48 dB
Wow & Flutter .....	0.035%(WRMS)	0.055%
Hum .....	65 dB	55 dB
Rumble .....	65 dB (DIN-B)	55 dB
Tonearm .....	Static balance type,tubular	
Head shell .....	Plug-in type	
Overall length .....	302mm	
Effective length .....	220mm	
Over hang .....	15mm	
Adjustable force range .....	0 to 4g	
Acceptable cartrige weight .....	4 to 10g	
Cartridge .....	MM-115B	
Frequency response .....	20—20,000Hz	
Channel difference at 1 kHz .....	1.5dB	3dB
Channel separation at 1 kHz .....	23dB	17dB
Output voltage at 1 kHz 50mm/sec. ....	4.8mV	2.4mV
Tracking force .....	2.0g	
Stylus tip .....	0.5mil	
Power source .....	220V/240V 50Hz	
Power Consumption .....	5W	9.5W
Dimensions .....	450(W)x355(D)x150(W)mm	
Weight .....	7kg	
Accessories .....	Head shell with cartridge	
	45 rpm adapter	
	Ground wire	

## NOTE:

**Lubrication of the mechanism is not required.** However, whenever a unit is brought in for adjustment or repair, always use good common sense - - clean any dust or dirt off of mechanical part and if moving parts do seem to bind, check for dirt and if necessary, add a very fine film of light-weight specially formulated lubricant.

## 2. DISASSEMBLY INSTRUCTIONS

### 1) a. Removal of Bottom Cover

Remove the Dust Cover and Platter. Fasten the Tonearm to the Armrest. Remove 5 screws marked (●) shown in Figure 1-a.

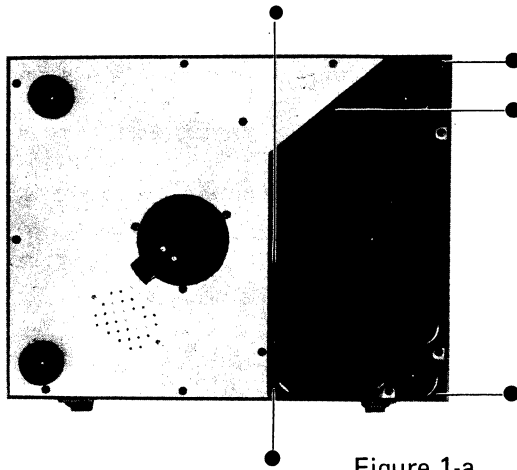


Figure 1-a.

### b. Removal of Bottom Board

Remove 16 screws marked (★) shown in Figure 1-b.

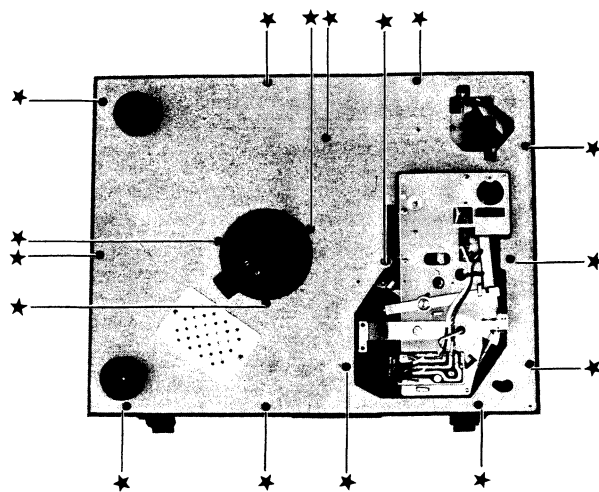


Figure 1-b.

### 2) Removal of Automatic Mechanism

Unsolder the pick-up leads from the Printed Circuit Board. Remove 3 screws marked "☆" shown in Figure 2. Lift the Mechanism carefully. All parts mounted on the Automatic Mechanism chassis can then be removed from cabinet.

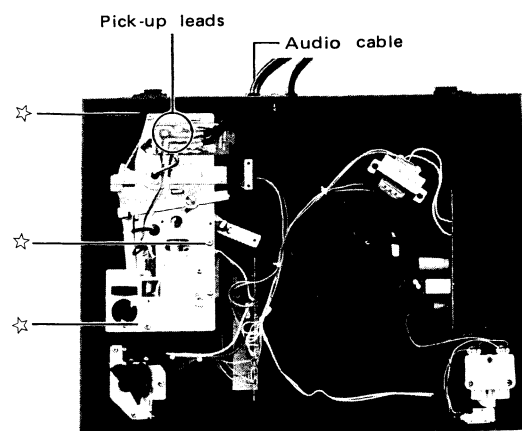


Figure 2

### 3) Removal of DC Motor

Remove Rubber Mat and Platter. Remove 3 screws marked "※" in Figure 3. Detach the motor connector.

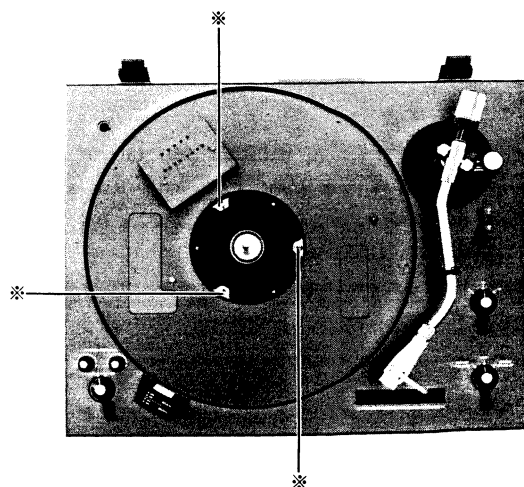


Figure 3

### 3. CARTRIDGE ASSEMBLY AND CONNECTIONS

Perform installation or replacement of the Cartridge as follows.

- 1) Attach the Cartridge to the headshell with screws.
- 2) The Polarities and L/R channel wires are shown in Figure 4. Make connections to the Cartridge following the instructions provided with it (and/or follow the markings on the Cartridge).

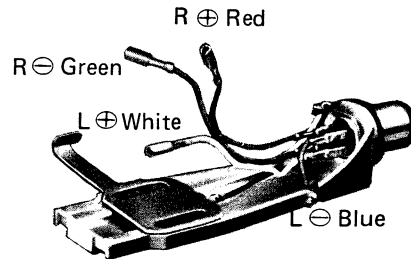


Figure 4

### 4. EXPLANATION OF AUTOMATIC MECHANISM

- 1) In the OFF Mode, S101, S102, S103 and S105 are OFF and S104 and Muting Switch are ON. Thus, Timing Motor is OFF and Cartridge output is short circuited.
- 2) When the Function Lever is moved to the START/REJECT position, S101 and S102 will be ON, and the Timing Motor starts rotating.

As it rotates, the Starting Cam also rotates and the Cam pushes S103 to turn ON. After Function Lever returns to the OFF position, S101 and S102 become OFF but S103 is kept ON so the Timing Motor keeps rotating. At the same time the main DC motor starts operation.

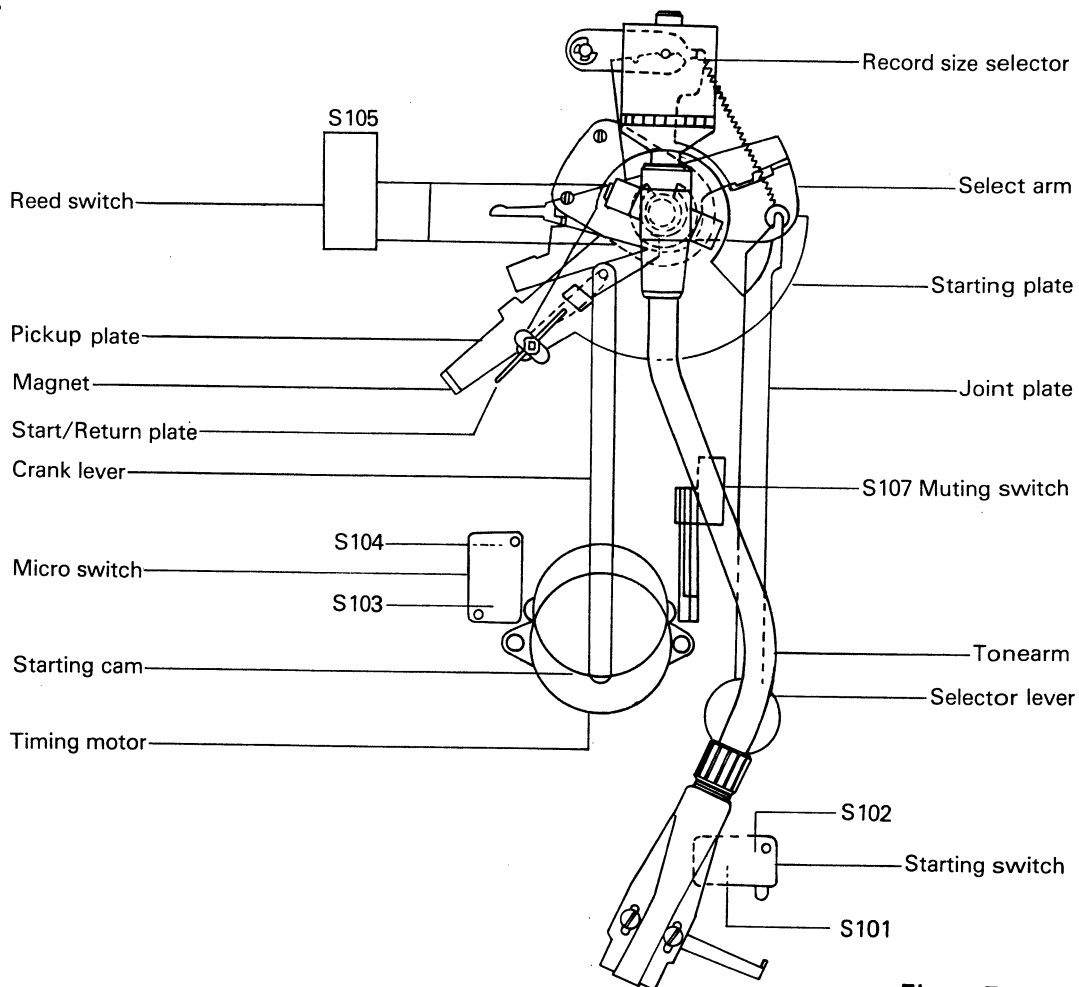


Figure 5

- 3) As the Starting Cam rotates, the Crank Lever moves and the Starting Plate will turn. The Start/Return Plate on the tip end of the Starting Plate pushes the Pickup Plate, which is linked with Tonearm. So, the Tonearm moves to the Platter.
- 4) When Pickup Plate comes to the position of Select Arm, the Select Arm stops the Pickup Plate and the Start/Return Plate will turn over and remove pressure from the Pickup Plate. Now the Tonearm has reached the lead-in groove. The lead-in position can be changed by the Record Size Selector. Figure 5 shows the position for 10" records.
- 5) The Starting Plate will still be turning, and the Arm Lifter (which is on the outer edge of Starting Plate) will descend as the sloped portion of Starting Plate comes under the Arm Lifter.
- 6) Now, the Starting Cam has made a half revolution, and another cam will turn S104 off, and the first cam will open the Muting Switch. So the Timing Motor stops rotating and the Cartridge will be ON.
- 7) At the end of playing, the magnet on the tip end of Pickup Plate will move next to S105 Reed switch. S105 will turn ON and the Timing Motor will start rotating. As the Starting Cam rotates, S104 will be turned ON again, so the Timing Motor keeps rotating.
- 8) Now the Crank Lever move in the opposite direction as described step 3 above and the Tonearm will return to Armrest. The Starting cam finishes another half revolution and S103 is turned OFF and Timing Motor and DC motor stop.
- 9) In START/REPEAT position, S101 is kept ON; so Timing Motor keeps rotating even after the Starting Cam has finished a whole revolution.
- 10) Manual Reject:  
When Function Lever is set to START/REJECT position, S102 is turned ON and the Timing Motor starts rotating. Operation continues as in step 8.
- 11) Manual Play:  
When the Tonearm is manually moved toward the Platter, the Pickup Plate only moves and the Manual Plate slides off from the Pickup Plate and drops as shown in Figure 6. By setting the Function Lever to START/REJECT position, the Starting Plate together with Start/Return Plate will move as described earlier, but the Manual plate will make Start/Return Plate turn before it pushes the Pickup Plate as shown in Figure 7. Therefore, the Tonearm will not be moved by Start/Return Plate and will descend on the groove manually selected.

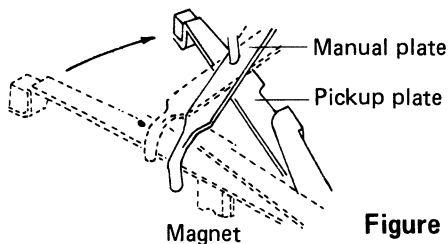


Figure 6.

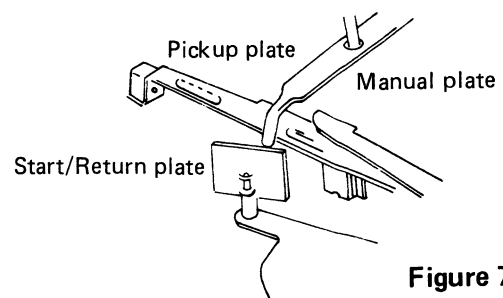


Figure 7.

## 5. CAUTION: WHEN REPLACING MANUAL PLATE

- 1) The Manual Plate must not move off from the Pickup Plate when the tonearm is moved to the extreme right hand side (See Figure 8).

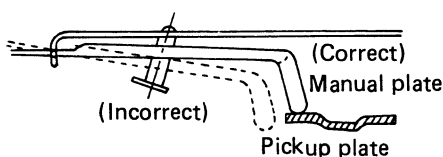


Figure 8.

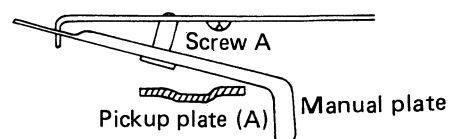


Figure 9.

- 2) When loosening screw A (See Figure 9) for replacing the Plate refer to the following adjustment.

Move the Tonearm about 10mm to 15mm to the left of the armrest.

The clearance between the Manual Plate and Start/Return plate must be 2mm to 3mm as shown in Figure 10.

After above steps 1 and 2, tighten screw A once again.

- 3) While the stylus tip rides in the first modulated groove (not lead-in groove) of 12" record (30cm), the manual plate must not touch the Pickup plate (See Figure 11).

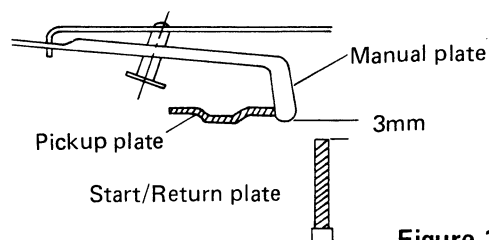


Figure 10.

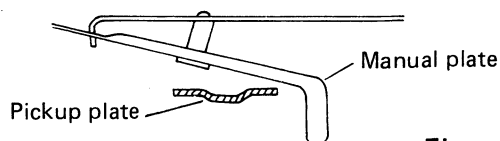


Figure 11.

## 6. ADJUSTMENT INSTRUCTIONS

### 1) Overhang adjustment

Adjust the overhang when the cartridge is mounted. The tonearm overhang should be 15mm. Adjust it by moving the cartridge back and forth after loosening the cartridge mounting screws.

Tighten the cartridge mounting screws after adjustment is completed. (Figure 12)

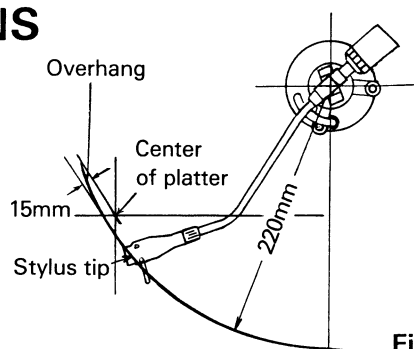


Figure 12

### Tracking force adjustment

The tracking force adjustment should be done before playing. The tracking force must be adjusted to the recommended value as shown on the instruction sheet of the cartridge.

- (1) Rotate the Counter weight until the tonearm is balanced evenly.
- (2) When the tonearm is balanced evenly turn the tracking force dial alone until the "0" on the dial ring of the counter weight is set over the indication line. The tonearm is now set at zero gram.
- (3) Turn the counter weight slowly until the line comes to the specified force

### 3) Anti-skating adjustment

Match the anti-skating dial setting to the tracking force setting.

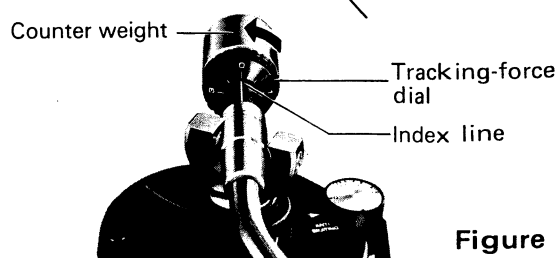
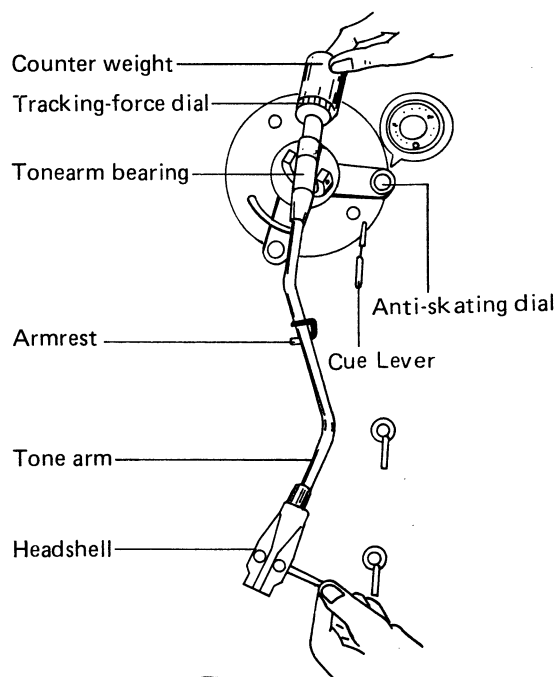
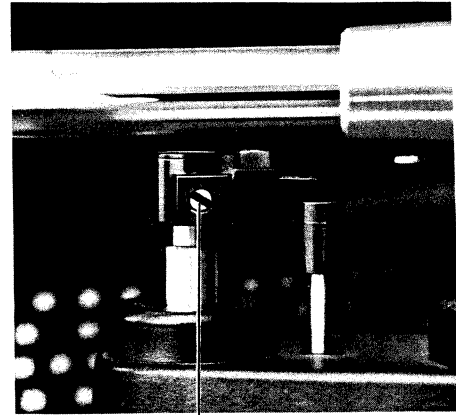


Figure 13

#### 4) Adjustment of Cuing Height

To adjust the height of the stylus tip when using the cuing facility, loosen the screw of the cuing mechanism shown in Figure 14. Adjust the height of the Cuing so that the distance between the stylus tip and record is between 7–10mm when a record is placed on the platter. After adjustment, tighten the screw securely.



Screw of the cuing mechanism

Figure 14.

#### 5) Adjustment of automatic mechanism

##### (1) Stylus Set-down adjustment

Move the Tonearm toward the center spindle until you see adjusting screw "A" accessible through the adjusting hole (See Figure 15). Adjust the screw so that Stylus Set-down is within 145mm to 147mm radius from the center spindle. To make the stylus set down closer to the center, turn the screw clockwise and to set down closer to the edge, turn the screw counter-clockwise.

##### (2) Auto Return Adjustment

Hold the Tonearm on the armrest so you can see screw "B" accessible through the adjusting hole. Adjust the screw so the stylus will lift off the record within the 57.5mm to 54.5mm radius from the center spindle. To make the stylus lift off later, turn the screw counter-clockwise, to lift off sooner, turn the screw clockwise.

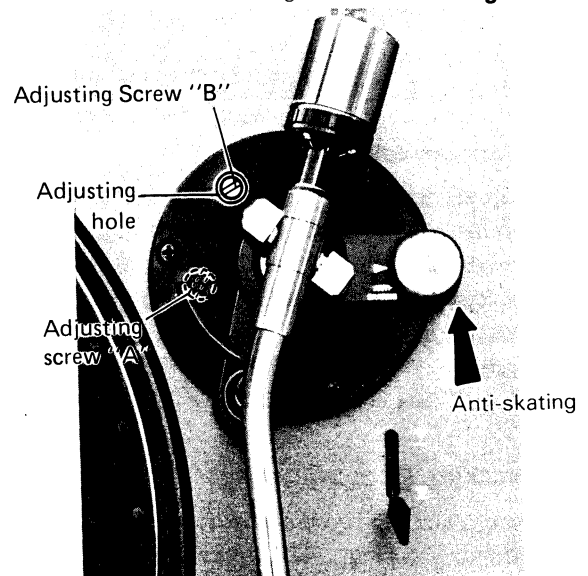


Figure 15.

#### 6) Speed Adjustment

When the pattern of the stroboscope appears to be moving and the rated speed cannot be obtained by turning a Speed Control knob, adjust the speed control semi-fixed resistor (VR1, 2) through the hole of the bottom plate.

- (1) Set the Speed Changeover lever to the speed to be adjusted.
- (2) Set the Speed Control knob of the desired speed at the center.
- (3) Gradually turn VR1 for 33 rotation and VR2 for 45 rotation so that the pattern of the stroboscope appears to stop.

Approx.  $\pm 6\%$  adjustment is possible.

**Note:** The DC Motor Assembly is precision assembled and adjusted at the factory. Never try to adjust and/or repair. Should the motor be defective, replace entire motor assembly.

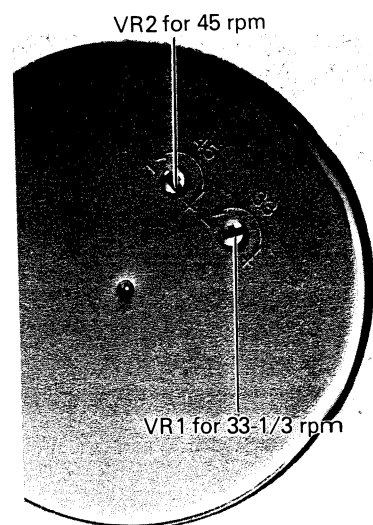


Figure 16.

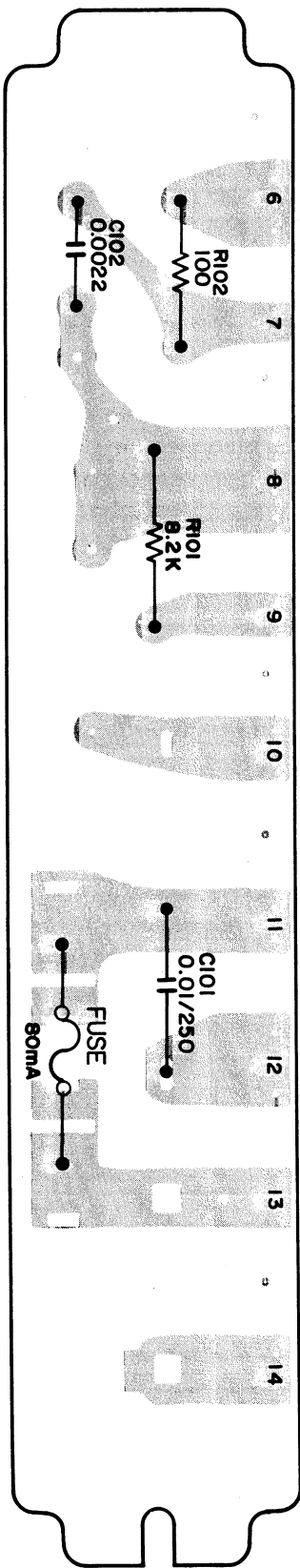


## 7. TROUBLESHOOTING

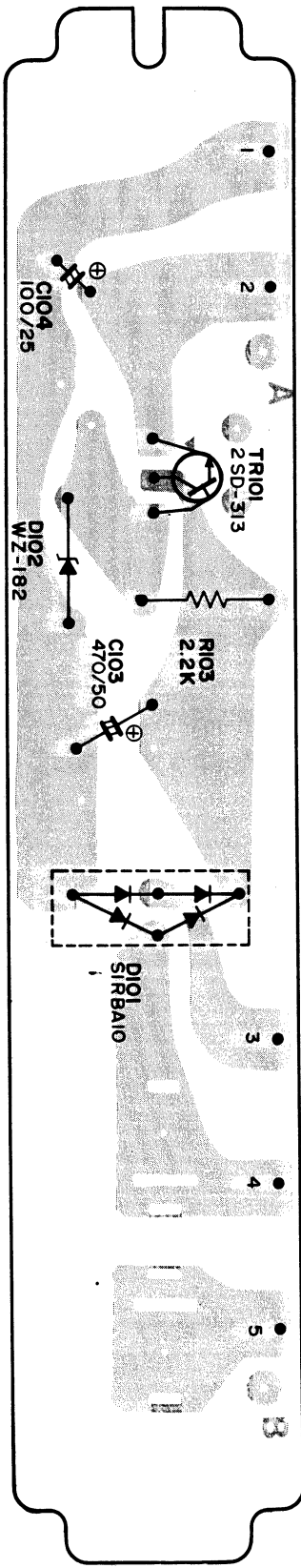
Symptom	Cause and What to Do
1. Turntable not rotating	1. Loose connection of power cord 2. Defective start switch 3. Defective timing motor
2. No sound	4. Cartridge open 5. Loose connection of output cable 6. Improper connection of output cable 7. Defective muting switch 8. Improper operation of amplifier 9. Improper contact of tonearm and headshell
3. Distorted or weak sound	10. Improper setting of stylus 11. Worn out stylus 12. Dirty stylus 13. Loose pivot of tonearm 14. Improper connection of cartridge leads 15. Poor record cutting
4. Hum	16. Cartridge leads open (ground side) 17. Loose connection of output cable 18. Improper connection of output cable 19. Improper contact of muting switch 20. Improper contact of tonearm and headshell
5. Rumble	21. Defective motor
6. Improper tracking	22. Defective tonearm 23. Dirty stylus 24. Defective stylus
7. Auto mechanism problems	25. Improper stylus pressure (too light)
7 - 1 Auto mechanism not operative	26. Defective muting switch, S107 27. Defective micro switch, S103. 28. Defective micro switch, S104. 29. Broken crank lever 30. Defective timing motor
7 - 2 Stylus set-down problems	31. Loose adjustments (Check Adjustment procedures) 32. Defective Start/Return plate <div data-bbox="921 1406 1470 1608"> </div>
7 - 3 Auto-return problems	33. Improper setting of select plate B 34. Loose adjustments (Check Adjustment procedures) 35. Defective Reed switch (S105) 36. Weak magnet 37. Improper setting of magnet <div data-bbox="921 1832 1285 1966"> </div> <p>Set magnet horizontally next to reed switch</p>

8. PRINTED CIRCUIT BOARD

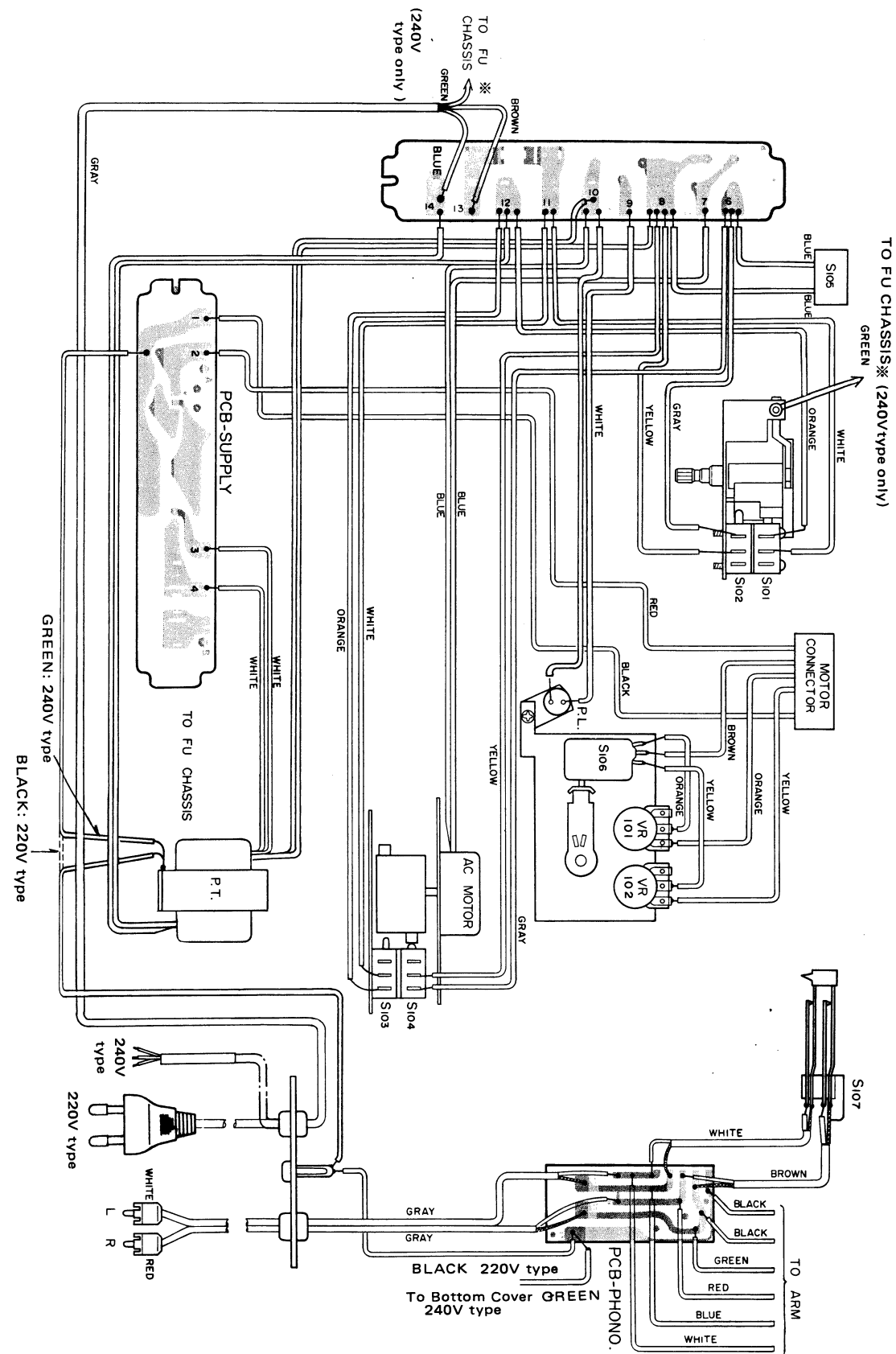
PCB-AUTO



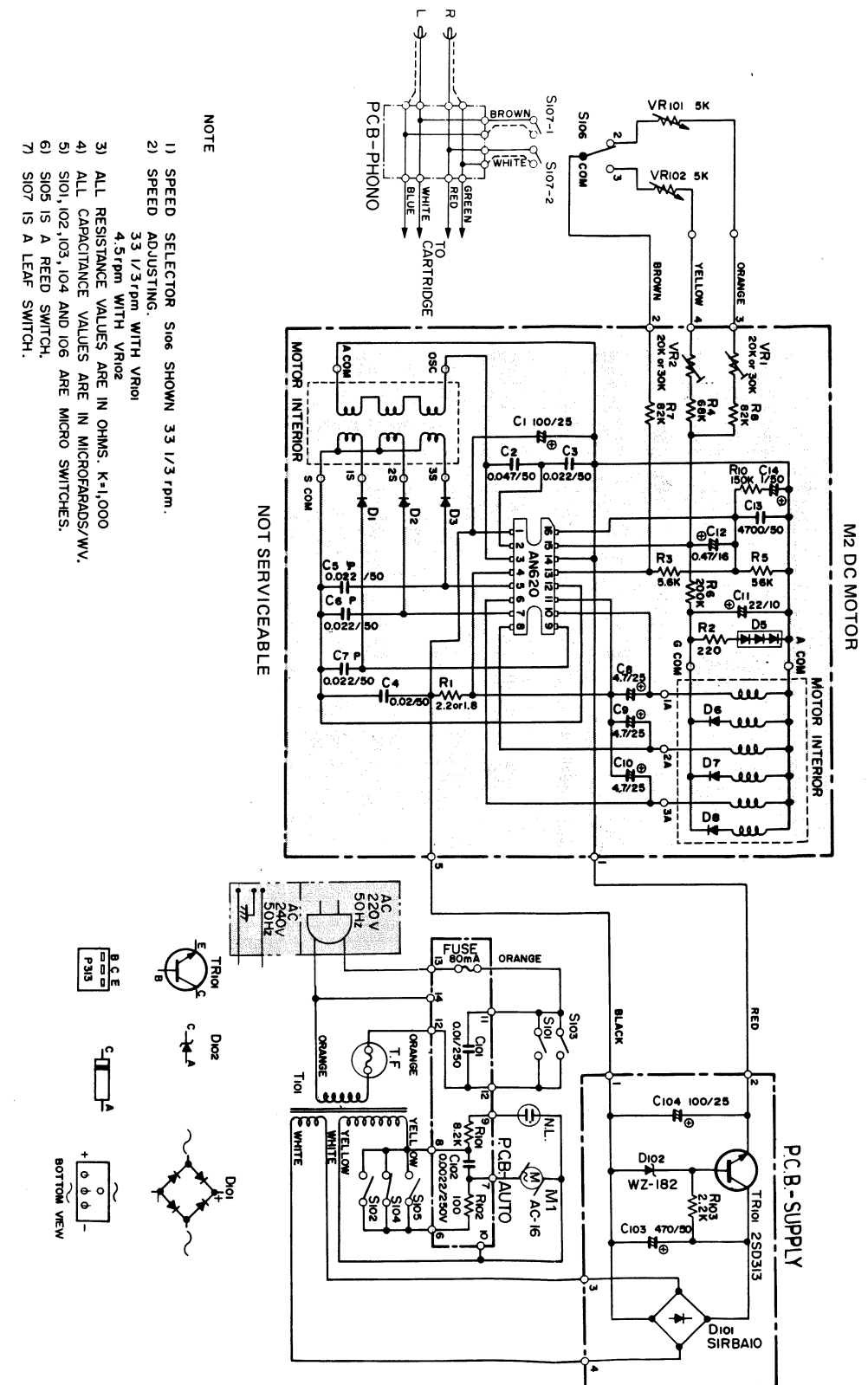
PCB-POWER SUPPLY



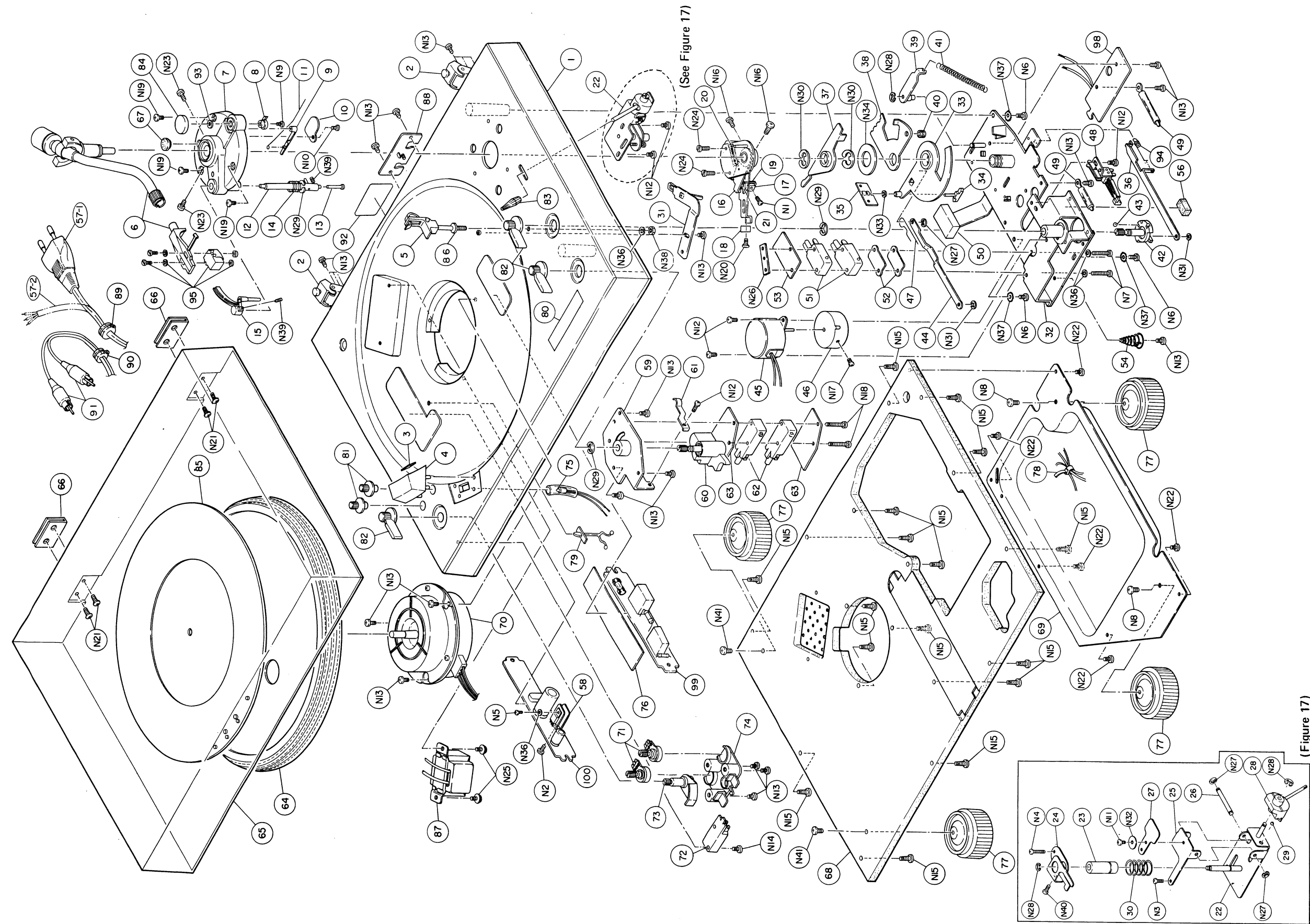
## 9. BOTTOM VIEW OF P.C.B. AND WIRING



## 10. SCHEMATIC DIAGRAM



11. EXPLODED VIEW



(Figure 17)

## 12. EXPLODED VIEW PARTS LIST

Symbol No.	Part No.	Description
1	20847928	Cabinet
2	20861689	Hinge
3	22833849	Lamp Lens
4	20846616	Lamp Cover
5	20738723	Pickup Rest Assembly
6	20731853	Pickup Arm
7	20735652	Pickup Stand
8	20757734	Inside Force Canseler Cam
9	20754673	Inside Force Canceler Lever
10	20847878	Inside Force Canceler Cover
11	20707750	Torsion Spring
12	20764730	Lifter Shaft
13	20763728	Shank Pin
14	22771723	Push Spring
15	20764735	Lifter Bar Assembly
16	20754678	Pickup Plate Assembly
17	22102041	Magnet
18	22102038	Magnet
19	20791977	Sheet
20	20705611	Pull Spring
21	20743788	Scotch Sheet
22	20735624	Lifter Bracket Assembly
23	20885618	Cylinder
24	20746779	Lifter Plate
25	20746780	Seesaw Plate
26	20763883	Seesaw Shaft
27	20709654	Plate Spring
28	20757733	Lifter Cam
29	74090318	Steel Ball 1/8
30	22771644	Push Spring
31	20754627	Manual Plate Assembly
32	20015763	Fullauto Chassis Assembly
33	20751761	Action Plate Assembly
34	20763799	Turn Shaft
35	20754609	Turn Plate
36	20754690	Joint Plate
37	20751786	Selector Plate Assembly (B)
38	20751762	Selector Plate Assembly (A)
39	20751764	Selector Plate Assembly
40	20881666	Bush
41	20705672	Pull Spring
42	20757738	Selector Cam
43	74090397	Steel Ball 5/32
44	20753771	Crank Lever
45	22125487	Motor (M1)
46	20757687	Action Cam
47	20707686	Torsion Spring
48	22146331	Leaf Switch (S107)
49	22754981	Cord Clamp
50	22140428	Proximity Switch (S105)
51	22140351	Micro Switch (S103, 104)
52	20743882	Sheet
53	20743883	Sheet
54	22771944	Push Spring

Symbol No.	Part No.	Description
56	22756893	Rubber Cushion
57-1	22176524	Power Cord (For 220V)
57-2	22177088	Power Cord p,v,w. 24/0.2 (For 240V)
58	22748624	Radiator
59	20836647	Sub Panel Assembly
60	20757737	Start Cam
61	22772561	Plate Spring
62	22140351	Micro Switch (S101, 102)
63	22752875	Barrier
64	20723706	Turntable
65	20847768	Dust Cover
66	20861688	Hinge
67	20881768	Rubber Cap
68	20826737	Bottom Board Assembly (For 220V)
	20826749	Bottom Board Assembly (For 240V)
69	20847924	Bottom Cover
70	22125486	Motor (M2)
71	22622207	Variable Resistor 5k ohms (VR101, 102)
72	22146335	Micro Switch (S106)
73	20757736	Speed Cam
74	20746929	Cam Support
75	22113354	Neon Lamp
76	22748768	P.C. Board Barrier
77	20842636	Foot
78	20975612	Band
79	22184166	Cord Clamp
80	22865705	Name Plate
81	20871915	Volume Knob
82	20871916	Knob
83	20871917	Lifter Knob
84	20871918	Inside Force Canceler Knob
85	20723697	Table Sheet
86	20773876	Washer
87	22223430	Power Transformer (T101)
88	22162364	S1P Terminal (For 220V)
	22162367	S1P Terminal (For 240V)
89	20881676	Bush (For 220V)
	22185131	Bush (For 240V)
90	22185126	Bush
91	22164771	PLUG-USIP-CORD
92	22956892	Main Label (For 220V)
	22866995	Main Label (For 240V)
93	22772572	Plate Spring
94	20705717	Pull Spring
95	22155326	Cartridge (MM - 115B) with Mounting Screw, Washer and Nut
98	22143189	PHONO P.C. Board
99	22143366	AUTO P.C. Board
100	22143317	SUPPLY P.C. Board

## 13. ELECTRICAL PARTS LIST

Symbol No.	Part No.	Description
N 1	22701636	Bind Head Screw, 2.6 x 4
N 2	70432606	Bind Head Screw, 2.6 x 6
N 3	70432608	Bind Head Screw, 2.6 x 8
N 4	70432614	Bind Head Screw, 2.6 x 14
N 5	70433006	Bind Head Screw, 3.0 x 6
N 6	70433008	Bind Head Screw, 3.0 x 8
N 7	22701613	Bind Head Screw, 3.0 x 30
N 8	70434008	Bind Head Screw, 4.0 x 8
N 9	72632006	Bind Head Tapping Screw, 2.0 x 6
N10	72632605	Bind Head Tapping Screw, 2.6 x 5
N11	72633005	Bind Head Tapping Screw, 3.0 x 5
N12	72633006	Bind Head Tapping Screw, 3.0 x 6
N13	72633008	Bind Head Tapping Screw, 3.0 x 8
N14	72633016	Bind Head Tapping Screw, 3.0 x 16
N15	22701650	Bind Head Tapping Screw, 4.0 x 18
N16	22701653	Pan Head Screw, 3.0 x 8
N17	22701605	Pan Head Tapping Screw, 3.0 x 8
N18	22701604	Pan Head Tapping Screw, 3.0 x 26
N19	22701648	Pan Head Tapping Screw, 4.0 x 10
N20	22701612	Flat Head Screw, 2.6 x 8
N21	70454010	Oval Head Screw, 4.0 x 10
N22	22701673	Wood Screw, 3.1 x 8
N23	20795941	Special Screw
N24	20795935	Special Screw
N25	20795916	Special Screw
N26	20796680	Special Nut
N27	74050020	Retaining Ring, 2.0 $\phi$
N28	74050030	Retaining Ring, 3.0 $\phi$
N29	74050040	Retaining Ring, 4.0 $\phi$
N30	22703578	Retaining Ring, 10.0 $\phi$
N31	74060030	Retaining Ring, 3.0 $\phi$
N32	20791649	Washer, 4.2 x 11 x 0.8
N33	20791609	Washer, 2.5 x 6.0 x 0.3
N34	22752756	Washer, 14 x 34 x 0.5
N36	74010030	Spring Washer, 3.0 $\phi$
N37	74022040	Lock Washer, 4.0 $\phi$
N38	73653000	Nut, 3.0 $\phi$
N39	74742604	Set Screw, 2.6 x 4
N40	20795958	Special Screw
N41	70434016	Bind Head Screw, 4.0 x 16

Symbol No.	Part No.	Description
<b>AUTO P.C. BOARD</b>		
C101	22330112	Metallized Paper Capacitor, 0.01mfd/250WV, M
C102	22330127	Metallized Paper Capacitor, 0.0022mfd/250WV, M
R101	22570164	Metal Oxide Resistor, 8.2k ohms, 1W, J
R102	22547101	Carbon Resistor, 100 ohms, 1/2W, K
	22144244	Fuse 0.08 A or
	22144308	Fuse 0.08 A
<b>SUPPLY P.C. BOARD</b>		
TR101	22114023	Transistor, 2SD313-E
D101	22115224	Diode, SIRBA10
D102	22115332	Diode, WZ182
C103	22448471	Electrolytic Capacitor, 470mfd/50WV
C104	22446101	Electrolytic Capacitor, 100mfd/25WV
R103	22545222	Carbon Film Resistor, 2.2k ohms, M